



Library Media

Grade 3

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Scope and Sequence

Month	Unit - Topic
September - Trimester 1	Unit 1
October - Trimester 1	
November - Trimester 1	
December - Trimester 2	Unit 2
January - Trimester 2	
February - Trimester 2	
March - Trimester 2/3	
April - Trimester 3	Unit 3
May - Trimester 3	
June - Trimester 3	

Library Media Standards - Progression of Learning - Disciplinary Concepts and Core Ideas

Unit 1- Life Literacy and Key Skills

Summary and Rationale

In this unit, students will gain a deeper understanding of Digital Citizenship and Technology Literacy, with a specific emphasis on conducting research, organizing information, and creating collaborative projects using Google Docs. They will also learn how to use Google Drive to store, access, and share their work. Through this unit, students will enhance their digital literacy skills while exploring the fascinating world of animals.

Recommended Pacing

Trimester 1 (September - November)

Standards

NJSLS 9.4 Life Literacies and Key Skills

Creativity and Innovation

9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
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Digital Citizenship

9.4.5.DC.1	Explain the need for and use of copyrights
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9.4.5.DC.2	Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.
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9.4.5.DC.4	Model safe, legal, and ethical behavior when using online or offline technology.
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Information and Media Literacy

9.4.5.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).
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9.4.5.IML.6	Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.
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Technology Literacy

9.4.5.TL.1	Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each.
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9.4.5.TL.3	Format a document using a word processing application to enhance text, change page formatting, and
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include appropriate images, graphics, or symbols.

Instructional Focus

Enduring Understandings:

Students will understand that...

Essential Questions:

EU 1.A: The Library Media Center is a place to access information and build new knowledge.

How can I become an effective user of the library media center?

EU 1.B: Books are organized in a library.

How can I find what I need?

EU 1.C: Computers serve multiple purposes and need to be used responsibly/ethically.

How can we use technology and collaborative tools like Google Suite to research, organize information, and present our understanding?

Evidence of Learning (Assessments)

PERFORMANCE ASSESSMENT(S)

Students will show that they really understand by evidence of...

Objective: To assess students' proficiency in utilizing Google Suite tools (Drive and Docs) for conducting animal research, organizing information, and presenting their findings with proper citations and references.

Assessment Description:

Students will demonstrate their understanding of animals and their digital literacy skills by creating a research project using Google Docs. The project should include researched information about a chosen animal, organized and formatted with proper citations and references.

Instructions for Students:

Choose an animal to research from the provided list or select one of your interest.

Use Google Search and other database tools to conduct research on your chosen animal, gathering information from credible online sources and books. Ensure to cite and reference all sources used.

Create a Google Docs document for your research project.

Organize the information gathered into structured sections, including but not limited to:

- Introduction to the animal
- Habitat and adaptations
- Diet and behavior
- Interesting facts

Properly format and organize your document using headings, lists, and visuals (images or diagrams) where appropriate.

Include citations and a reference page at the end of your document, following a specified citation style (e.g., MLA, APA) as taught in class.

Share your completed project with the teacher via Google Drive and be prepared to present key information about your chosen animal to the class.

Objectives (SLO)

<p>ESSENTIAL KNOWLEDGE (EK) <i>Students will know...</i></p>	<p>LEARNING OBJECTIVES (LO) <i>Students will be skilled at...</i></p>
<p>EK 1.A</p> <ul style="list-style-type: none"> ● Library media center ● Computers - keyboarding ● Positive Digital Footprint - Community, digital citizenship, responsibility ● Password protection ● Internet <p>EK 1.B</p> <ul style="list-style-type: none"> ● Book Care and Responsibility ● Sections of the library ● Dewey Decimal System <p>EK 1.C</p> <ul style="list-style-type: none"> ● Navigate multiple online resources ● Mini research project (ex. Pebblego.com, WorldBookOnline, Follet Destiny, Google Search). ● Advanced Search, Boolean, Filters ● Copyright, Originality, Creative Commons, References, Licensing, watermarking, Sources 	<p>LO 1.A.1: Follow library media procedures, on the command of the library media specialist or on their own.</p> <p>LO 1.A.2: Locate and check-out appropriate reading materials.</p> <p>LO 1.A.3: Care for books and other library materials.</p> <p>LO 1.A.4: Use computers and other technology devices in a responsible manner.</p> <p>LO 1.A.6: Input information using keyboarding skills</p> <p>LO 1.A.7: Access School Websites, including Nutley Public Schools Website and Schoology.</p> <p>LO 1.A.8: Define and describe a password's purpose.</p> <p>LO 1.B.1: Locating and selecting appropriate reading materials based on reading level, interest, and research specific.</p> <p>LO 1.B.2: Identify 10 Dewey sections of the library</p> <p>LO 1.C.1: Identify and access Follet Destiny icon on desktop.</p> <p>LO 1.C.2: Locate visual search feature and input a query.</p> <p>LO 1.C.3: Digital tools and panel in Google Suite</p> <ul style="list-style-type: none"> ● Create and rename a document ● Format text ● Use print preview ● Share <p>LO 1.C.4: Identify research needs and select the most efficient software program and websites to meet that need.</p> <p>LO 1.C.5: Utilize library skills to research real animals</p> <p>LO 1.C.6: Cite sources</p>

Suggested Lesson Resources/Technology Tools

<p>1.A. Library Media Center Orientation and Digital Citizenship</p> <ul style="list-style-type: none"> ● Review of library media routines and procedures ● Schoology, Clever - Log into Schoology and other district programs using Nutley Schools credentials ● Keyboarding <ul style="list-style-type: none"> ○ Using Nutley Schools credentials to log into TypeTastic ○ Number Keys, shift and symbol keys ● BrainPop Jr. Parts of the Computer <ul style="list-style-type: none"> ○ Parts of a Computer ● Common Sense Media - Rings of Responsibility <ul style="list-style-type: none"> ○ How do digital citizens take responsibility for themselves, their communities, and their world? ○ Your Rings of Responsibility Common Sense Education ● Common Sense Media - Password PowerUp <ul style="list-style-type: none"> ○ How can a strong password help protect your privacy? ○ Password Power-Up Common Sense Education ● Common Sense Media - This is Me <ul style="list-style-type: none"> ○ How does what I post online affect my identity? ○ This Is Me Common Sense Education ● Common Sense Media - Power of Words <ul style="list-style-type: none"> ○ What should you do when someone uses mean or hurtful language on the internet? 	<p>SUGGESTED TIMEFRAME: 4-5 class periods</p>
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1.B. Dewey Decimal System SUGGESTED TIMEFRAME: 1-2 class periods

- How to tell and where to find a book meets interest level, reading level.
- Understand that nonfiction books use a Dewey Decimal Number and fiction books use ABC order to organize books in a LMC.
- Compare 10 Dewey sections of library to aisles in a grocery store
- Dewey Decimal Rap
- Find a book on animals

1.C. Online Safety and Digital Citizenship SUGGESTED TIMEFRAME: 4-5 class periods

Books:

- Jenkins, Steve. (2018). "Animals by the Numbers." Houghton Mifflin Harcourt.
- Arnosky, Jim. (2019). "Wild Tracks!: A Guide to Nature's Footprints." Sterling Children's Books.

Websites:

- National Geographic Kids - "Animals." Retrieved from <https://kids.nationalgeographic.com/animals/>
- San Diego Zoo - "Animal Bytes." Retrieved from <https://kids.sandiegozoo.org/animals>
- PebbleGo
- Follett Destiny

Lesson 1: Introduction to Google Suite

Objective: Introduce students to Google Suite tools (Drive and Docs) and explain their functionalities.

Activities:

- Demonstrate how to create, save, and access documents in Google Drive.
- Explain basic features of Google Docs (e.g., formatting text, adding images).
- Google Docs for Kids - Episode 1: What Is It?

Lesson 2: Researching Animals

Objective: Teach students how to conduct research using online resources and books.

Activities:

- Introduce various credible websites and books for animal research.
- Guide students on effective search strategies for finding information.
- Have students choose an animal to research for their project.
- Search features - Boolean Search, Google Advanced Search, Filters

Lesson 3: Organizing Information in Google Docs

Objective: Show students how to organize gathered information in a structured format using Google Docs.

Activities:

- Teach students how to create headings, lists, and tables in Google Docs.
- Provide templates or guides for organizing research notes about their chosen animal.

Lesson 4: Collaborative Project Work

Objective: Encourage collaboration among students to create a shared Google Docs project about their chosen animals.

Activities:

- Assign groups and guide students in collaborating on a shared document.
- Monitor and assist groups in compiling information, adding visuals, and formatting their projects.

Lesson 5: Sharing and Presenting Projects

Objective: Teach students how to share their completed projects and present their findings.

Activities:

- Instruct students on how to share their Google Docs projects with peers or the teacher.
- Allow groups to present their projects to the class, discussing their chosen animal's characteristics and interesting facts.
- Utilize Schoology

Modifications

Special Education

- Students' personal device used to log in and access websites
- Flexible seating arrangements, and movement breaks
- Call student name before asking a question
- Extend wait time after asking question
- Scaffolded instructions
- Sensory modifications
- Frequent check-ins
- Extended time or modified assignments

ELL

- Spanish/multilingual book section of library
- Translated materials
- Visual aids
- Opportunities for language practice in groups, language buddies

Gifted and Talented

- Free reading time (in lieu of drill and practice routines)
- Assessment option - students will write stories about their animals

504

- Preferential seating
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Behavior management support, movement breaks
- Provide a quiet space, if necessary, to minimize distractions
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Frequent check-ins
- Extended time or modified assignments

Virtual

- Utilize online learning platforms (i.e., Google Meet and Schoology) to meet with students virtually, with the goal of introductions and “get-to-know-you” as well as establishing routines/expectations for remote-virtual learning specific to library media.
- Virtual read-alouds, demonstrations, and discussions about library media.

Career Readiness, Life Literacies, and Key Skills Practices

Please select all career readiness, life literacies, and key skills practices that apply to this unit of study:

- Act as a responsible and contributing community member and employee.
- Attend to financial well-being.
- Consider the environmental, social, and economic impacts of decisions.
- Demonstrate creativity and innovation.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity increase collaboration and communicate effectively.
- Work productively in teams while using cultural/global competence.

Unit 2 Computer Skills and Coding

Summary and Rationale

There is a dual purpose for this unit.

First, for students to participate in a fantasy creature creation project, utilizing research on animals (from Unit 1) and technology tools. This section of the unit aims to foster creativity while teaching students about digital ethics, copyright, media literacy, and critical thinking. It encourages them to be responsible digital citizens and utilize diverse sources to explore their curiosity and creativity.

Second, to expand on students' computer programming skills. In computer programming, students will learn that some algorithms are more appropriate for a specific use than others. They will explore a variety of control structures that are used to change the flow of program execution (e.g., sequences, events, loops, conditionals, functions). Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.

Recommended Pacing

Trimester 2 (December - March)

Standards

NJSLS 9.4 Life Literacies and Key Skills

Creativity and Innovation

9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
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Digital Citizenship

9.4.5.DC.1	Explain the need for and use of copyrights
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9.4.5.DC.2	Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.
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9.4.5.DC.3	Distinguish between digital images that can be reused freely and those that have copyright restrictions.
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9.4.5.DC.4	Model safe, legal, and ethical behavior when using online or offline technology.
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9.4.5.DC.5	Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.
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Information and Media Literacy

9.4.5.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).
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9.4.5.IML.4	Determine the impact of implicit and explicit media messages on individuals, groups, and society as a whole
9.4.5.IML.6	Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.
NJSLS 8.1 Computer Science	
Computing Systems	
8.1.5.CS.1	Model how computing devices connect to other components to form a system.
8.1.5.CS.2	Model how computer software and hardware work together as a system to accomplish tasks.
Networks and the Internet	
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
Algorithms and Programming	
8.1.5.AP.1	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
8.1.5.AP.3	Create programs that include sequences, events, loops, and conditionals.
8.1.5.AP.4:	Break down problems into smaller, manageable sub-problems to facilitate program development.
Instructional Focus	
Enduring Understandings: <i>Students will understand that...</i>	Essential Questions:
EU 2.A: Computers serve multiple purposes and need to be used responsibly/ethically.	How can computers be used to alter the truth, and is this ethical digital behavior?
EU 2.B: Computer programers can write, describe, and apply algorithms using multiple coding concepts.	How do functions serve as a mini program inside of your bigger program?
Evidence of Learning (Assessments)	
<p>PERFORMANCE ASSESSMENT(S) <i>Students will show that they really understand by evidence of...</i></p> <p>PART 1: Assessment Title: Fantasy Creature Creation Objective: Students will demonstrate their understanding of fantasy creature creation and apply copyright principles to their work. Assessment Components: <ul style="list-style-type: none"> Fantasy Creature Design (Creativity and Application) - 60 points <ul style="list-style-type: none"> ● Design and drawing of the fantasy creature using a computer program (e.g., KidPix, Camera App, etc.) or hand-drawn if technology isn't available. </p>	

- Creativity in combining different animal features to create a unique fantasy creature.
- Use of colors, details, and imagination in the design.

Description and Characteristics - 20 points

- A written description of the fantasy creature explaining its appearance, abilities, habitat, and any unique features.
- Clear communication of the characteristics of the creature.
- Optional - write a fantasy story about the creature.

Application of Copyright Principles - 20 points

- A short explanation or reflection on how copyright principles were applied to the creation of the fantasy creature.
- Demonstrating an understanding of copyright, giving credit if using any references, and explaining how originality was maintained.

Rubric:

Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
Creativity and Originality	15-20	10-14	5-9	0-4
Use of Design Tools/Artistic Techniques	15-20	10-14	5-9	0-4
Overall Presentation and Details	15-20	10-14	5-9	0-4
Clarity and Detail of Creature Description	15-20	10-14	5-9	0-4
Inclusion of Essential Characteristics	5-7	3-4	1-2	0
Understanding of Copyright and Attribution	10-12	7-9	4-6	0-3
Explanation of Copyright Application	10-12	7-9	4-6	0-3

Total Points: 100

Guidelines for Assessment:

- Students will be given specific instructions and a rubric outlining the criteria for the assessment.
- Provide students with information about copyright principles and guidelines for attributing sources if they used references for their creature.
- Encourage students to be creative and original while respecting copyright laws.
- Assessment can be conducted through physical or digital submission of drawings and written descriptions.

PART 2: Kodable

- Mastery of computer programming skills - progress monitored via Kodable program

Objectives (SLO)

ESSENTIAL KNOWLEDGE (EK)

Students will know...

EK 2.A:

- Digital Citizenship - ethics, pledge
- Copyright, Originality, Creative Commons, References, Licensing, watermarking, sources
- Imaging tools - Camera, advertising, alter, persuade, photo retouching
 - Tool - Kidpix
- Digital alteration, advertising

EK 2.B

- Computational Thinking and Programming Concepts: Algorithms, variables, conditions, loops, functions, debugging, events

LEARNING OBJECTIVES (LO)

Students will be skilled at...

- LO 2.A.1: Develop and adhere to a digital citizenship pledge
- LO 2.A.2: Recognize that photos and videos can be telling (identity, assumptions) but not always true - can also be altered digitally.
- LO 2.A.3: Choose an animal and using a computer program (e.g., KidPix, Camera App), design and create a fantasy version of the animal (e.g., a crab with butterfly wings).
- LO 2.A.4: Apply creativity and imagination to develop a unique fantasy creature.
- LO 2.A.5: Discuss copyright principles and how they apply to creative work.

- LO 2.B.1: Demonstrate an understanding that code follows specific organization patterns.
- LO 2.B.2: Debugging checks, detects and corrects errors or bugs to allow proper program operation according to set specifications.
- LO 2.B.3: Use coding language, such as sequence, loop, code, blockly, algorithm, if-then, de-bug, loops, functions, and events.

Suggested Lesson Resources/Technology Tools

2.A. SUGGESTED TIMEFRAME: 5-6 class periods

- Common Sense Media - Is Seeing Believing?
 - Why do people alter digital photos and videos?
 - Is Seeing Believing? | Common Sense Education
- Students analyze different image alteration scenarios (old photos, modified captions, fake images, etc.).
- Engage in discussions about why changes are made, ethical considerations, and the impact of altered images on perception.
- Students explore and define terms like "alter," "advertising," and "persuade" in the context of digital images and media.
- Read and discuss books related to creatures, animals, and imagination to inspire creativity and imagination.
- Discuss copyright principles and how they apply to the students' creative work.
- Emphasize the importance of respecting others' work and giving credit when using resources.
- Need for Copyrights:
 - *Protecting Creators*: Discuss how copyrights safeguard creators' rights, encourage innovation, and enable creators to earn recognition and income for their work.
 - *Balancing Access and Ownership*: Debate the balance between protecting intellectual property and ensuring accessible information for the public good.

- Attribution and Creative Commons:
 - Explore the concept of Creative Commons licenses and how they facilitate the sharing of creative works while respecting copyright. Discuss the importance of proper attribution when using public domain or Creative Commons-licensed media.
- Distinguishing Digital Images:
 - Identify characteristics of images that can be freely reused, such as those in the public domain or under Creative Commons licenses, and those that have copyright restrictions.
 - Discuss strategies for determining whether an image is copyright-free or restricted, considering watermarking, licensing information, and sources like reputable image repositories.
- Tech Tool - Kidpix, Camera App
- Interactive Read Aloud: Creature Features, Animals by the Numbers, Mixed Up Chameleon, Animals Real and Imagined

2.B. SUGGESTED TIMEFRAME: 4-5 class periods

- Kodable

Modifications

Special Education

- Students' personal device used to log in and access websites
- Flexible seating arrangements, and movement breaks
- Call student name before asking a question
- Extend wait time after asking question
- Scaffolded instructions
- Sensory modifications
- Frequent check-ins
- Extended time or modified assignments

ELL

- Spanish/multilingual book section of library
- Translated materials
- Visual aids
- Opportunities for language practice in groups, language buddies

Gifted and Talented

- Free reading time (in lieu of drill and practice routines)
- Advanced coding

504

- Preferential seating
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Behavior management support, movement breaks
- Provide a quiet space, if necessary, to minimize distractions
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Frequent check-ins
- Extended time or modified assignments

Virtual

- Utilize online learning platforms (i.e., Google Meet and Schoology) to meet with students virtually, with the goal of introductions and “get-to-know-you” as well as establishing routines/expectations for remote-virtual learning specific to library media.
- Virtual read-alouds, demonstrations, and discussions about library media.

Career Readiness, Life Literacies, and Key Skills Practices

Please select all career readiness, life literacies, and key skills practices that apply to this unit of study:

- ✓ Act as a responsible and contributing community member and employee.
- Attend to financial well-being.
- Consider the environmental, social, and economic impacts of decisions.
- ✓ Demonstrate creativity and innovation.
- ✓ Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- ✓ Use technology to enhance productivity increase collaboration and communicate effectively.
- Work productively in teams while using cultural/global competence.

For more information: New Jersey Student Learning Standards - Career Readiness, Life Literacies, and Key Skills (pages 15-16)

Unit 3

Summary and Rationale

In this unit, students will explore the principles of engineering design and the nature of technology. They will engage in the systematic and creative process of designing, building, testing, and modifying a parachute for gummy bears. Throughout the unit, students will learn about the factors influencing technology innovation, the importance of meeting needs while considering limitations, and the unintended consequences of technology on the environment.

Recommended Pacing

Trimester 3 (April - June)

Standards

NJSLS 8.2 Design Thinking

Engineering Design

8.2.5.ED.1	Explain the functions of a system and its subsystems.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
8.2.5.ED.4	Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process
8.2.5.ED.6	Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.

Interaction of Technology and Humans

8.2.5.ITH.1	Explain how societal needs and wants influence the development and function of a product and a system.
8.2.5.ITH.2	Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have.

Nature of Technology

8.2.5.NT.1	Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.
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NJSLS 9.4 Life Literacies and Key Skills

Creativity and Innovation	
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
9.4.5.CI.4	Research the development process of a product and identify the role of failure as a part of the creative process.
Critical Thinking and Problem-Solving	
9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process.
9.4.5.CT.2	Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.
9.4.5.CT.3	Describe how digital tools and technology may be used to solve problems.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
Instructional Focus	
Enduring Understandings: <i>Students will understand that...</i>	Essential Questions:
EU 3.A: Engineering design is a creative process of communicating and collaborating to meet a design challenge. EU 3.B: Technology has an impact on humans and the environment.	How does the application of the EDP help me to develop the best solution to a given problem? What factors influence technology innovation?
Evidence of Learning (Assessments)	
<p>PERFORMANCE ASSESSMENT(S) G.R.A.S.P.S</p> <p><i>Students will show that they really understand by evidence of...</i></p> <p>Assessments:</p> <ul style="list-style-type: none"> ● Participation in class discussions and activities. ● Completion of design sketches and modifications. ● Performance of the parachute during testing. ● Presentation of the final parachute design and rationale behind modifications. <p>Gummy Bear Challenge</p> <p>Objective: To evaluate students' understanding of the engineering design process, their ability to apply design principles, and their comprehension of the impact of technology on meeting needs while considering limitations.</p> <p>Assessment Components:</p> <p>Design Plan (10 points):</p> <ul style="list-style-type: none"> ● Students will create a detailed design plan for their gummy bear parachute, including sketches, materials list, and a brief explanation of how their design meets the requirements and constraints. 	

Parachute Construction (15 points):

- Assessment of the construction process, including how well students followed their design plan, the craftsmanship of the parachute, and the incorporation of design modifications.

Testing and Performance (20 points):

- Each group's parachute will undergo multiple drop tests from a designated height.
- Evaluation will be based on the time taken for the gummy bear to descend, the smoothness of the descent, and whether the gummy bear remains safely seated within the parachute structure.

Modifications and Iterations (10 points):

- Assessment of the modifications made by each group based on the initial testing, and whether the adjustments led to improvements in the parachute's performance.

Presentation and Explanation (10 points):

- Students will present their final parachute design to the class, explaining the rationale behind their design choices, modifications, and how their design met the needs and limitations of the challenge.

Collaboration and Teamwork (10 points):

- Evaluation of how effectively students worked as a team, shared responsibilities, communicated ideas, and collaborated throughout the project.

Understanding of Engineering Design Principles and Technology's Impact (15 points):

- An assessment of students' understanding of engineering design principles, including how they applied these principles in their parachute design.
- Evaluation of students' grasp of the impact of technology on meeting needs, considering limitations, and the unintended consequences on the environment.

Reflection and Self-Assessment (10 points):

- Students will write a short reflection on their experiences throughout the project, including challenges faced, lessons learned, and self-assessment of their contributions to the team.

Assessment Rubric:

Criteria	Points
Design Plan	10
Parachute Construction	15
Testing and Performance	20
Modifications and Iterations	10
Presentation and Explanation	10
Collaboration and Teamwork	10
Understanding of Design Principles	15
Reflection and Self-Assessment	10

Total

100

Objectives (SLO)

ESSENTIAL KNOWLEDGE (EK)

Students will know...

EK 3.A

- Engineering Design Process, constructs, limitations
- Design Challenges
- SEL skills: Collaboration, communication, failure

EK 3.B

- Nature of Technology
- Technological innovations and their impact on society
- Societal needs and wants
- Environmental impacts of technology
- Basic principles of parachute design: surface area, material selection, and aerodynamics

LEARNING OBJECTIVES (LO)

Students will be skilled at...

LO 3.A.1: Name the steps of the Engineering Design Process
LO 3.A.2: Discuss the systemic process of problem-solving in engineering design

LO 3.A.3: Collaborate with peers in small groups.

LO 3.A.3: Brainstorm and present ideas for improving existing technologies.

LO 3.B.1: Identify the six simple machines used by mechanical engineers in designs that can complete specific tasks.

LO 3.B.3: Discuss various factors that influence technological innovation, such as needs, limitations, and improvements.

LO 3.B.4: Discuss the unintended consequences of technology on the environment.

LO 3.B.5: Provide examples of how global climate changes are requiring design to meet different societal and environmental needs.

LO 3.B.6: Use the natural world as an example of design in creating solutions to global problems.

LO 3.B.7: Define the concept of parachutes and their function in slowing down the descent of objects.

LO 3.B.8: Discuss the basic principles behind parachute design, including surface area, material selection, and aerodynamics.

LO 3.B.9: Present the culminating project: Design, build, test, and modify a parachute for gummy bears (or other object).

LO 3.B.10: Conduct parachute drop tests from different heights to observe and analyze the performance of each design, and modify as needed.

LO 3.B.11: Reflect on the engineering design process and the challenges faced during the project.

LO 3.B.12: Discuss the importance of meeting design requirements and limitations in engineering.

Suggested Lesson Resources/Technology Tools

3.A. SUGGESTED TIMEFRAME: 3-4 class periods

- A case of the What ifs? (Crash Course Kids) A Case of "What-Ifs": Crash Course Kids #29.1
- Let's Communicate lesson from Family Engineering Book
- Video about simple machines Simple Machines for Kids | Learn all about the 6 simple machines!
- Learning from Failure lesson from Family Engineering Book
- Try Trials (Crash Course Kids)

3.B. SUGGESTED TIMEFRAME: 5-6 class periods

- What can we do to help? | NASA Climate Kids
- Inspired by Nature lesson from Family Engineering book
- How parachutes work | The science of air resistance
- Parachute | Science for Kids | Brain Freeze
- parachute - Students | Britannica Kids | Homework Help
- Perfecting Parachutes for Thrill-Seeking Gummy Bears: Engineering Design Challenges in the Elementary Classroom
- Back to School STEM with Fred the Worm Extension Activities | All About 3rd Grad
- Make a Parachute | STEM Activity
- Parachute materials: tissue, plastic bag, scissors, ruler, tape, hole puncher, twine, gummy bear or other figure
- Eggstronaut Parachute Challenge Educator Guide - NASA

Modifications

Special Education

- Students' personal device used to log in and access websites
- Flexible seating arrangements, and movement breaks
- Call student name before asking a question
- Extend wait time after asking question
- Scaffolded instructions
- Sensory modifications
- Frequent check-ins
- Extended time or modified assignments, such as less constraints on design projects

ELL

- Spanish/multilingual book section of library
- Translated materials
- Visual aids
- Opportunities for language practice in groups, language buddies

Gifted and Talented

- Modified assignments, such as more constraints on Design projects or heavier objects for parachute challenge

504

- Preferential seating
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Behavior management support, movement breaks
- Provide a quiet space, if necessary, to minimize distractions
- Accessible materials, as per student needs (large print, audio, digital texts, etc.)
- Frequent check-ins
- Extended time or modified assignments

Virtual

- Utilize online learning platforms (i.e., Google Meet and Schoology) to meet with students virtually
- Screencast demonstrations of Design Challenges
- Virtual read-alouds, demonstrations, and discussions about library media.
- Use of Design Squad website

Career Readiness, Life Literacies, and Key Skills Practices

Please select all career readiness, life literacies, and key skills practices that apply to this unit of study:

- ✓ Act as a responsible and contributing community member and employee.
- Attend to financial well-being.
- ✓ Consider the environmental, social, and economic impacts of decisions.
- ✓ Demonstrate creativity and innovation.
- ✓ Utilize critical thinking to make sense of problems and persevere in solving them.
- ✓ Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- ✓ Use technology to enhance productivity increase collaboration and communicate effectively.
- ✓ Work productively in teams while using cultural/global competence.

For more information: New Jersey Student Learning Standards - Career Readiness, Life Literacies, and Key Skills (pages 15-16)